

## ORIGINAL ARTICLE OPEN ACCESS

# Explaining Public Sector Corruption: The Hexagon Model

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## ABSTRACT

Different disciplines ask why public sector corruption occurs, addressing diverse phenomena. However, how different approaches and factors at micro, meso, or macro levels relate to each other in causally complex, context-dependent ways is seldom theorized. This article develops an integrated “Corruption Hexagon” model with six dimensions. The analytically relevant context provides a not directly causal background that influences the interplay of the pressure to act corruptly, the opportunity to benefit from corruption, the capability to exploit the opportunity, the supply of corruption, and the rationalization of one’s corrupt behavior. Using secondary data from 23 European countries, we operationalize the Hexagon to explain differences in procurement-related corruption risks. Results corroborate the Hexagon’s expectations: whereas the circumstances enable corruption, their interplay with personal characteristics or rationalization triggers corruption. The Hexagon offers a flexible, context-dependent, complexity-informed model for cumulative research integrating different methods and theoretical assumptions about the agency underlying corruption.

## 1 | Introduction

This article introduces the “Corruption Hexagon” framework for explaining why public sector corruption occurs. Public sector corruption, hitherto referred to as “corruption,” is “the misuse of public office for private gain” (Mikkelsen 2013, 367). Whereas “black” forms of public sector corruption, like bribery, are clearly morally and legally unacceptable, more elusive “gray” or “white” forms, such as rule-bending or fraudulent absenteeism, are not necessarily punishable (Heidenheimer 2017). They have in common that politicians or bureaucrats receive an individual, material gain or sexual favor from not exercising their office in an ethical, impartial way, thus deceiving the trust that was put in them *qua* their public office (Bjarnegård et al. 2024). By abusing taxpayer’s money, eroding democracy and rule of law, corruption is a significant problem whose determinants need to be understood for effectively tackling it (Bauhr et al. 2020).

A vibrant, interdisciplinary academic literature addresses the question of why corruption occurs—including fields like public administration, public law, political science, criminology, economics, psychology, management, or development studies (Graycar, Ainscough, and Masters 2019; Weißmüller and Zuber 2023). Different disciplines tend to focus on specific phenomena at the aggregate macro, the meso or the micro level of specific persons or events (Jancsics 2014). However, “neither the individual nor the organizational and societal perspective alone fully explains corruption and (...) integrative explanations are most useful” to do so (De Graaf and Huberts 2008, 650). Beyond proposing factors that potentially contribute to corruption and the micro-level of individual behavior (Weißmüller and Zuber 2023), there is still a need for more theorizing of the complex mechanisms and processes underlying corruption (Zhang et al. 2019): “although relevant advances have been made, the challenge to design theoretical (...) frameworks that

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are able to handle the complexity of this phenomenon remains” (Nicolás-Carlock and Luna-Pla 2021, 153).

Accordingly, there is still a widely recognized need for a comprehensive explanatory model that accounts for the contextual and complex nature of an illicit social behavior like corruption, combines various levels of analysis, and enables cumulative research whose findings can speak to each other (De Graaf 2007; De Graaf and Huberts 2008; Gans-Morse et al. 2018; Weißmüller and Zuber 2023). Specifically, “research indicates that corrupt behavior is driven by a multitude of different mechanisms that have their origin at both the individual and the collective level. Moreover, while the decision to engage in corrupt behavior is the result of a deliberative decision (...) there are many conflicting mechanisms at play” (Dimant and Schulte 2016, 71). Therefore, “given the multifaceted nature of corruption, the importance of a comprehensive and general analytical framework—not necessarily universal but that unifies the different disciplinary perspectives—and that encompasses proper conceptualizations and definitions of corrupt practice cannot be overstated” (Nicolás-Carlock and Luna-Pla 2021, 156).

This article proposes such a complexity-informed, integrated model of corruption that operates at various analytic levels: the Corruption Hexagon. In so doing, it responds to calls that “existing models have to be updated in order to adapt to the current developments in the field” (Vousinas 2019, 16). For example, Wolfe and Hermanson’s (2004) “Fraud Diamond” models corruption as the combination of individual-level pressure, opportunity, capability, and the process of self-justifying one’s corrupt behavior (“rationalization”) (Cressey 1953; J. W. Dorminey et al. 2010; Kassem and Higson 2012; Rustiarini et al. 2019). This article reviews and merges different disciplinary insights to enhance the Fraud Diamond by expanding its conception of circumstances and formulating less restrictive causal expectations. Specifically, we argue for integrating three insights from extant research in order to explain corruption.

First, economists, lawyers, and behavioral scientists stress that *contextual backgrounds*, while not direct causes of corruption, pose limits to the extent to which our explanations and conceptions of corruption can travel (Graycar 2015; Mungiu-Pipidi 2006; Weißmüller and Zuber 2023). Second, corruption has a *supply side*, where specific actor constellations or behaviors constitute an offer of corruption that public officials may or may not take (Gauthier, Goyette, and Kouamé 2021; Søreide 2002). Accordingly, our integrated “Corruption Hexagon” model has six dimensions. The analytically relevant context provides a not directly causal background that influences the interplay of the motivation or pressure to act corruptly, the opportunity to benefit from corruption, the capability to exploit the opportunity, the supply of corruption, and the rationalization of one’s corrupt behavior. Third, we need to understand *how antecedents of corruption interact*. We distinguish the circumstances of corruption from the actors involved in it, and the passive possibility of corruption occurring from the active pursuing of corruption (Capasso and Santoro 2018). This allows for a complexity-informed theorization of how these different factors combine to explain active and passive corruption differently (Capasso and Santoro 2018, 117).

To demonstrate the Hexagon’s feasibility and utility for comparative research, we use secondary sources and fuzzy-set Qualitative Comparative Analysis to explain differences in corruption risks in public procurement among 23 European Union (EU) member states (Fazekas, Tóth, and King 2016; Thomann, Marconi, and Zhelyazkova 2024). Results support the Hexagon’s core theoretical tenets: whereas the circumstances enable and incentivize corruption as a necessary condition, their interplay with personal characteristics or rationalization triggers corruption.

The Corruption Hexagon is useful for comparatively explaining corruption by integrating insights from several disciplines, moving beyond listing explanatory variables, and modeling the context-specificity, causal complexity, and heterogeneity underlying corruption (De Graaf 2007; Weißmüller and Zuber 2023). It is designed for all scholars, from different disciplines, who study white, gray or black forms of public sector corruption at macro, meso, or micro level. Being compatible with but going beyond the “not universally applicable” (Schuchter and Levi 2016, 2) Fraud Triangle or the Fraud Diamond and Weißmüller and Zuber’s (2023) micro-level, behaviorally-informed model, the Hexagon can be flexibly applied and operationalized in a wide variety of research settings at micro, meso or macro level, depending on the analytic levels and variants of corruption analyzed.

We now summarize disciplinary approaches to studying corruption and identify the need for an integrated perspective. We then develop the Corruption Hexagon, outline expectations, and illustrate its application. We discuss the advantages of the Hexagon framework for more cumulative corruption research.

## 2 | Disciplinary Approaches to Explaining Corruption

Approaches to explain corruption depart from different theoretical assumptions about human agency, see Table 1 (De Graaf 2007; Jancsics 2014). While all these theoretical perspectives contribute something valuable, the Hexagon framework combines them for the purpose of explanation.

First, under *rational-actor models*, corruption results from cost/benefit analysis of utility-maximizing individual actors under badly structured incentives. Second, *structural models* posit that institutionalized social structures, such as organizational culture, social norms, moral values, or societal and organizational pressure, are external forces that shape embedded individual corrupt behavior. Third, *relational models* conceptualize corruption as exchanges, emphasizing social interactions and networks which are trust-based or result from unequal power dynamics. Fourth, under “*bad apple*” theories, corruption emerges from bad character, such as lacking integrity or criminal energy, and individual backgrounds. Finally, *correlation models* (De Graaf 2007) analyze correlations between variables at individual, organizational, or societal level without an underlying theory of agency. Different disciplines often prioritize one specific level of analysis. We now review the different approaches’ strengths and weaknesses, before proposing a framework that integrates approaches and levels.

**TABLE 1** | Approaches to explaining corruption.

<b>Theoretical model</b>	<b>Agency underlying corruption</b>	<b>Main analytic level</b>	<b>Prevailing disciplines</b>
Rational-actor	Cost/benefit analysis of individual actors who maximize their utility within a principal-agent relationship	Micro-assumptions, but often studied at aggregate level	Economy, public choice, comparative politics
Structural	Embedded agency from institutionalized social structures	Macro or meso	Sociology, public law, public policy, public administration
Relational	Social exchange based on trust or unequal power relations	Micro or meso	Anthropology, (political) psychology, (political) sociology
Bad apple	Bad character of exceptional individuals	Micro	Criminology, public administration, psychology
Correlation	Correlations between variables	Macro or micro	Economics, political science

Source: Adapted from De Graaf (2007), Jancsics (2014).

### 2.1 | Macro Level: Sociology, Comparative Politics, and Economics

Scholars adopting a structural perspective (Jancsics 2014) highlight the importance of formal and informal institutions such as culture, generalized trust, and education, and the function that corruption has for political and economic development (Collier 2002; Osrecki 2017). From a material perspective, corruption is less likely in countries with strong market competition and economic growth (Treisman 2000). Conversely, strong competition can also lead some economic actors to engage in misconduct, rule-breaking, and even corrupt activities (Zahra, Priem, and Rasheed 2005). Structural models explain corruption through immaterial factors and societal pressure, beyond material interests and conscious, voluntary decisions. Internalized social norms and values that prevail in already corrupt countries encourage individuals to behave corruptly (Fisman and Miguel 2010). However, they neglect the individual reasons behind corruption (De Graaf 2007). Sociologists have long advocated for a “more focused and disaggregated research focusing on different forms and contexts, rather than the current broad-brush approaches” (Heath, Richards, and De Graaf 2016, 51).

Economic and comparative political approaches pursue a “quantitative approach in numerically comparing, correlating and ranking corruption” (Osrecki 2017, 103). Comparative politics emphasizes societal values of integrity and trust (Morris and Klesner 2010), highlighting the role of corruption in processes of democratization, participation, and (institutional) development (Bardhan 2017; Gillanders 2014; Heidenheimer and Johnston 2017; Mungiu-Pippidi 2006). (Political) economy approaches focus on structural incentives and payoffs, such as government size (Rose-Ackerman 1997).

Among economists and comparative political scholars, the correlation theory approach to corruption is widespread (Treisman 2000), which tends to ignore “situational aspects and contingencies” (De Graaf 2007, 8). It often conceptualizes corruption crudely as either aggregate population-level corruption perceptions or institutional integrity (Jancsics 2014; Thomann, Marconi, and Zhelyazkova 2024)—resulting from levels of competition, development, democracy, or dysfunctional state institutions (Lambsdorff et al. 2005). This focus on aggregated

country-level phenomena (Markscheffel and Plouffe 2022) neglects the lower-level causal mechanisms underlying corruption, risking ecological fallacies.

### 2.2 | Meso Level: Public Law, Policy, and Administration

Public policy, law and administration scholars often adopt a structural approach at the meso level of policies, organizations, and sectors. They ask how regulation affects corruption (Dunlop and Radaelli 2019), and what institutional measures can reduce corruption (Fazekas, Sberna, and Vannucci 2022; Persson, Rothstein, and Teorell 2013; Søreide 2002; Villeneuve, Mugellini, and Heide 2020), such as increasing transparency (Kaufmann, Mehrez, and Gürgür 2019), strengthening accountability (Bauhr et al. 2020), monitoring and anti-corruption enforcement (Baltrunaite et al. 2021). Public administration scholarship studies public organizations, such as public sector integrity and leadership (Miao et al. 2013), civil service management (Meyer-Sahling, Mikkelsen, and Schuster 2018), salaries (Navot, Reingewertz, and Cohen 2016), job security and career perspectives (Oliveros and Schuster 2018) and connections (Harris et al. 2023). These approaches acknowledge the importance of public sector agency but neglect the macro-level context and the political nature of corruption. They often emphasize specific variables rather than the “multi-layered and dynamic process of social cognition” making public servants corrupt (Weißmüller and Zuber 2023, 1704).

### 2.3 | Micro Level: Behavioral, Psychological, and Criminological Approaches

Behavioral, psychological, and criminological approaches zoom in on individual attitudes toward or motivations for corruption, and/or specific instances of corruption. The psychological perspective on corruption scrutinizes individual-level behavioral and cognitive aspects of corrupt practices, including motivation, integrity (Weißmüller and Zuber 2023), need and greed (Rose-Ackerman 1997). Its rational choice strand assumes that individual identities and past relations are unimportant

(Jancsics 2014). This assumption, where corrupt actors maximize their own material benefit within principal-agent relations, neglects intrinsic and latent motivations leading to corruption (Jancsics 2014; Navot, Reingewertz, and Cohen 2016; Weißmüller and Zuber 2023). While rational choice offers a clear and parsimonious theory (De Graaf 2007), it contradicts the theory of planned behavior, where human behavior results from attitudes toward a certain action and the perception of its social appropriateness (Weißmüller and Zuber 2023). By not considering the institutional structures in which individuals' actions are embedded (Collier 2002), the rational choice model is rather static (corruption occurs in a specific moment), mechanical (certain actors' preferences automatically lead to an outcome), and substantialist (actors' preferences on a given transaction do not change) (Emirbayer 1997). Corresponding anti-corruption reforms mischaracterize corruption as a principal-agent problem in which corrupt agents are to be controlled by non-corrupt principals (Persson, Rothstein, and Teorell 2013; Schuster, Meyer-Sahling, and Mikkelsen 2020).

Relational, (cultural) anthropological and sociological models consider a wider network of participants in a corrupt transaction based on social, often non-monetary exchange and reciprocity (Lévi-Strauss 1971; Rose-Ackerman 2010). They focus on interpersonal connections at horizontal (e.g., nepotism) and vertical (e.g., boss-subordinate relationship) level in small groups (Jancsics 2014). Here, corruption is not a one-shot market transaction, but a dynamic process involving transfers and counter-transfers over time (Blundo 2017), which can be a pathology in democratic systems, or provide stability in authoritarian regimes (Ledeneva 1998). While considering both supply and demand, relational studies over-emphasize actors at the expense of institutional settings and organizational environments. Still, “the relational approach (...) bridge[s] agency with structure in corruption research” (Jancsics 2014, 366).

Behavioral public administration accounts for psychological influences of values, culture, and institutional practices on individual behavior, which can vary across cultures and settings (Graycar 2015; Heidenheimer 2017). Individual corruptibility at the micro level focuses on intrinsic motivations, work-related opportunities and well-being that influence the corruptibility of bureaucrats (Zhang et al. 2019). However, this type of research requires data on the individual level of cognition. While it acknowledges that corruption is contingent on institutional and organizational contexts, it still needs to go beyond stating that “individual corruptibility is socially co-created within the institutional context of public bureaucracies” (Weißmüller and Zuber 2023, 1720) and that what is legally forbidden and morally unacceptable in some countries/societies may be allowed in others (Weißmüller and Zuber 2023).

Criminologists study corruption as a special case of unethical behavior (Loyens and Maesschalck 2010). Adopting a “bad apple” lens, corruption occurs because some individuals have a predisposition to criminal activity and act based on low moral values such as greed (Sorunke 2016). These approaches theorize individual characters in depth, but often without empirical analysis or an explanation why some individuals are predisposed to bad character (De Graaf 2007). The “Fraud Diamond” model (Wolfe and Hermanson 2004), enhancing Cressey's (1953) “Fraud

Triangle,” models the behavioral process underlying corruption though four factors in diverse empirical settings (Ruan-kaew 2016). First, pressure/motivation as a non-shareable, individual problem presents the public official with an incentive to commit corruption. Second, public officials see an opportunity that they could exploit to make corruption possible, without risking being punished (Kassem and Higson 2012). Third, they rationalize their wrongdoing as acceptable and “worth the risk” to justify corruption (Wolfe and Hermanson 2004, 2; Cressey 1953). Fourth, the involved actors have the capability, that is the psychological character, personal skills, and technical knowledge, for acting in a corrupt way without getting caught.

The Fraud Diamond emphasizes the interplay of four factors, but it neither specifies the explanatory weight of each factor (Rustiarini et al. 2019), nor theorizes how the four factors interact (Weißmüller and Zuber 2023). The subjective perspective of the corrupt person is essentially unobservable (J. W. Dorminey et al. 2010). The Fraud Diamond has been tested mainly in contexts where economic and organizational factors overwhelmingly determine corruption (Weißmüller and Zuber 2023), but not in capitalist contexts of highly individualistic values (Mungiu-Pippidi 2006; Rustiarini et al. 2019). Criminological theories focusing on fraud need to be adapted for explaining corruption (De Graaf 2007). A model that achieves a more balanced integration of individual and systemic factors is essential “to investigate the systemic, interactive, and multilevel nature of organizational corruption, going beyond individual- and group-level factors, and bridging research domains” (Rosenblatt 2012, 238).

## 2.4 | The Need for an Integrated Perspective

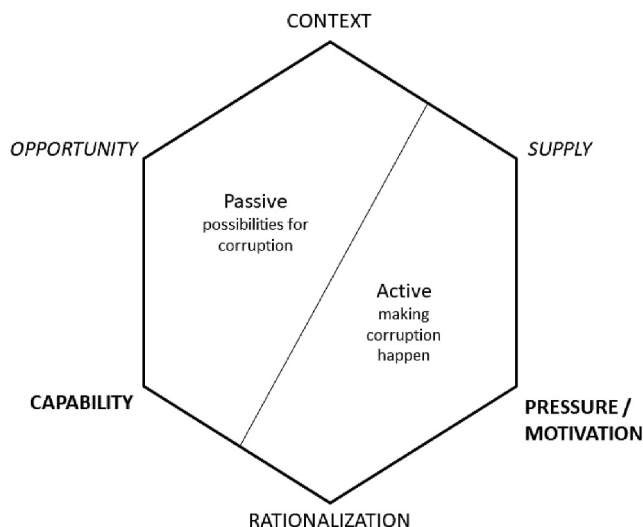
Our review shows that although progress has been made (Nicolás-Carlock and Luna-Pla 2021), disciplinary boundaries sometimes still characterize corruption research: “models developed by different academic disciplines are often isolated from each other” (Jancsics 2014, 358). When these boundaries hamper cumulation, an integrated perspective is needed because “corruption research is often complicated by a fragmentation of the discourse across many disciplines (...), lacking theoretical and evidence-based concepts that are both precise and applicable to different cultural and institutional environments” (Weißmüller and Zuber 2023, 1705). This happens when each discipline gives only partial and static explanations of corruption, while assuming its own approach to have the strongest explanatory power (De Graaf 2007). Typically, corruption is studied at one moment in time (Rustiarini et al. 2019). However, relational approaches show that corruption involve both the public official receiving material benefits, the private actor supplying it (Gauthier, Goyette, and Kouamé 2021; Søreide 2002), and how their transactional relationship unfolds over time (Bauhr 2017).

Few existing approaches address the causal complexity underlying actual processes of corruption, where different factors interact in complex ways over time (Dimant and Schulte 2016; Falletti and Lynch 2009; Nicolás-Carlock and Luna-Pla 2021; Vousinas 2019). As Weißmüller and Zuber (2023, 1722) put it: “a complex array of causal relationships (...) influence corruptibility dynamically and social relationships (...) [and] shape agents' perception of moral

legitimacy, behavioral adequacy, and accountability. (...) there are complex institutional, social, and political systems in which these clusters of factors are embedded. Their interaction in context should be brought into greater empirical focus (...) [to] uncover the causal mechanisms that explain how and when these factors could be antecedents or outcomes.” Neglecting this complexity fails to teach us what works best under which circumstances (De Graaf 2007). Scholars across disciplines agree that corruption research needs an explanatory model that integrates analytic levels, the receiving and the supply side, various theoretical perspectives, and enables researchers to analyze both levels of corruption and specific instances of corruption (Dimant and Schulte 2016; Nicolás-Carlock and Luna-Pla 2021; Rosenblatt 2012; Vousinas 2019). It should explicitly model plural causal processes, account for the context (Weißmüller and Zuber 2023) and the complexity of corrupt behavior (De Graaf 2007). We now propose such a model.

### 3 | The Corruption Hexagon

The Corruption Hexagon model enhances the Fraud Diamond with insights from several disciplines to integrate the structural macro- and meso-level *context* and the relational nature of corruption including a *supply side* into its *configurational perspective*, see Figure 1. The Corruption Hexagon models corruption as the interplay of six sets of factors which pertain to the context, the concrete circumstances, the characteristics of the actors involved in corruption, and a rationalization process. Context, opportunities, and actor capacities pertain to the possibilities that *passively* shape how corruption can occur. Passive factors do not refer to something that corrupt actors actually do, but to their possibilities of doing it—they need to exploit this possibility, though. Conversely, supply, pressure/motivation, and rationalization describe how *actively* corruption is sought after, that is, how the giver(s) and receiver(s) actually make a corrupt transaction happen. Active factors refer to something actors actively do when exploiting possibilities, respectively a concrete reason why they do it. This novel distinction models



**FIGURE 1** | The Corruption Hexagon. Italics: situational circumstances of corruption, bold: personal characteristics of involved public officials.

how public officials are in charge in corrupt transactions to different degrees (Capasso and Santoro 2018).

The Hexagon model in Figure 1 directly visualizes the multi-dimensional, multilevel, and complex nature of corruption. Its six corners capture that corruption results from the interplay of these multiple dimensions (Gerrits and Verweij 2013; Thomann and Ege 2020). As we travel from the upper part of the figure downwards, we move from the macro-level context to meso-level circumstances, with individual-level personal characteristics and rationalization being on the lowest level of analysis. By integrating macro-level context, meso-level circumstances, and micro-level personal characteristics, the Corruption Hexagon inherently combines different analytic levels—even when empirically aggregating these factors. It adds further nuance by visually distinguishing active from passive factors, and highlighting the processes that link the different corners.

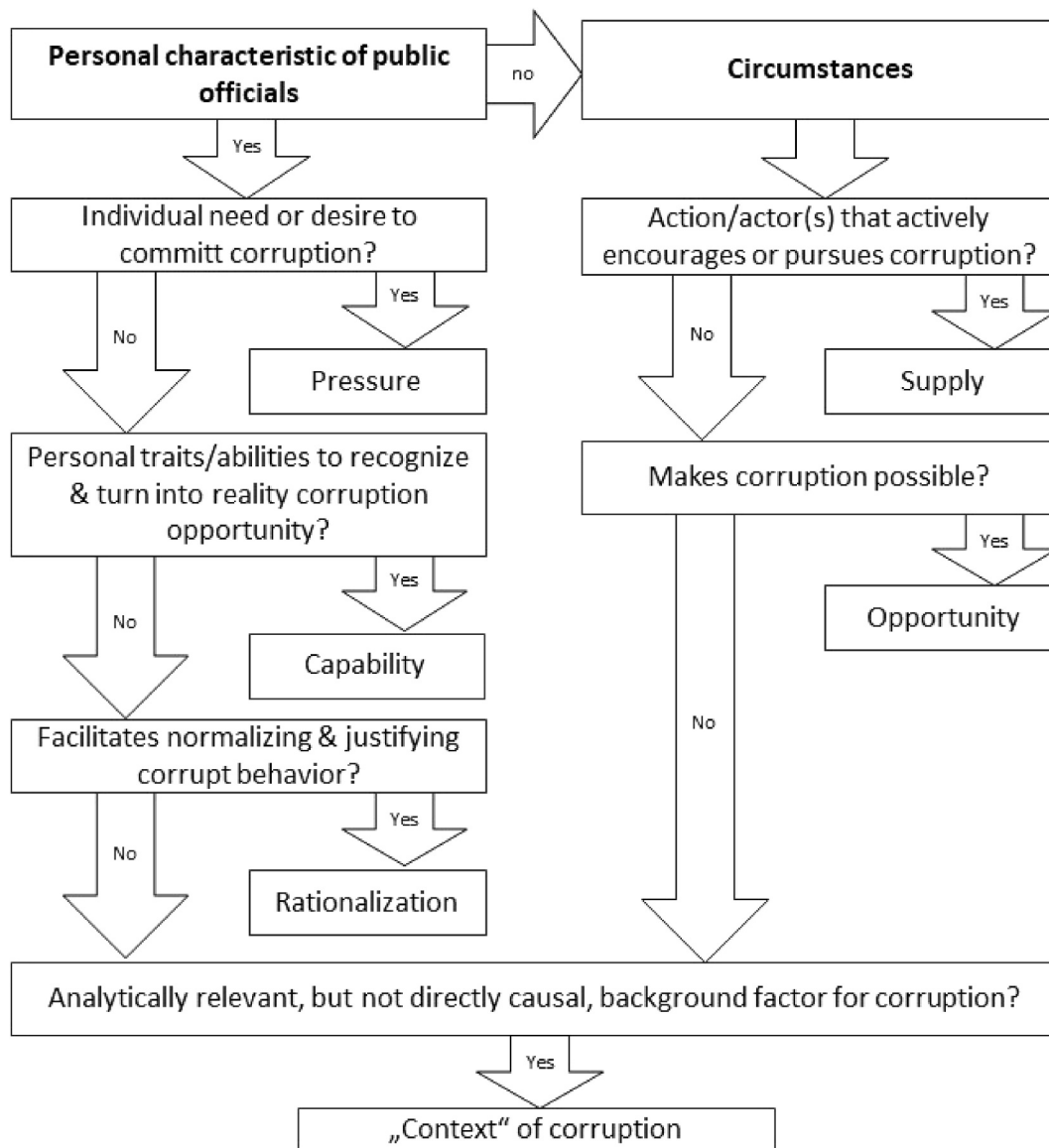
Scholars can operationalize the Hexagon corners flexibly to suit a concrete analytical and empirical setting. Attributing a specific indicator to a Hexagon corner is an analytic decision that requires theoretical or empirical knowledge about its influence on corruption, see Figure 2.

Initially, one can distinguish personal characteristics of the potentially corrupt public officials (at different levels of aggregation) from the circumstances within which corruption occurs. Secondly, based on existing knowledge about the factor’s effects, researchers decide whether to consider it an active factor that describes how actors make corruption happen. If not, they proceed to ask if the factor passively shapes how corruption can occur. If the answer to both questions is no, then the researcher decides whether the factor potentially constitutes rationalization and, if not, a relevant context for corruption, that is a background variable acting as a barrier or changing meaning.

We now elaborate on the six corners and illustrate them on a non-exhaustive set of prominently posited antecedents of corruption risks in public procurement (Fazekas, Tóth, and King 2016; Fazekas et al. 2023; Thomann, Marconi, and Zhelyazkova 2024), see Table 2. The present study’s choice of indicators is theoretically grounded in a thorough interdisciplinary literature review, while pragmatically considering the availability of secondary data for covering a large number of EU member states. This comes with limitations, as secondary data for empirical illustration is not available for all possible or suitable indicators. This operationalization does not represent the Hexagon framework itself, but serves as one possible illustration—neither the only possible nor the most exhaustive approach—of how it could be applied empirically. Future applications of this model may incorporate additional or refined indicators that better capture the complexity of corruption risks across various contexts. For other sectoral contexts, variants of corruption, or at a different analytic level, other indicators could better operationalize the Hexagon.

#### 3.1 | Context

The very notion of corruption and its causes are subject to contextual boundary conditions such as cultural norms,



**FIGURE 2** | Step-wise heuristic for operationalization. *Source:* Own illustration.

societal values (Weißmüller and Zuber 2023), or macro-economic and structural conditions, rather than universal (Graycar 2015; Mungiu-Pippidi 2006; Weißmüller and Zuber 2023). Therefore, “no overarching general theory [of corruption] that allows robust statements across cultural contexts, countries, or even institutions exists” (Weißmüller and Zuber 2023, 1707). What constitutes context is often underdeveloped in social research (Goertz 1994; Thomann and Ege 2020). Beyond just variables at a higher level of analysis or aggregation, context depicts “the relevant aspects of a setting (analytical, temporal, spatial, or institutional) in which a set of initial conditions leads (...) to an outcome (...) that is, those [aspects] that allow the mechanism to produce the outcome” (Falleti and Lynch 2009, 1152). Integrating structural perspectives, the Corruption Hexagon classifies as “context” *the analytically relevant background that matters for corruption, but does not directly lead to it.*

Integrating context allows scholars to “consider the boundary conditions of corrupt behavior instead of assuming universality of

motives, attitudes, and behaviors” (Weißmüller and Zuber 2023, 1705). Thus, context in itself does not explain corruption. Instead, context entails “background variables” (Weißmüller and Zuber 2023) that set the stage for how the mechanisms leading to corruption unfolds. For example, some corruption variants or actor relationships can only happen in some contexts, while other contexts, by limiting the options that are available, render their occurrence very unlikely (Xin and Rudel 2004). Alternatively, the context can change the meaning of how social phenomena are understood and how the relationships between them unfold (Goertz 1994). For instance, culture can affect how acceptable corruption is seen (De Graaf 2007; Kravtsova, Oshchepkov, and Welzel 2017; Weißmüller and Zuber 2023); thereby, cultural context is likely to shape the individual rationalization process. By enabling researchers to empirically evaluate the specific ways in which context plays a role, the Hexagon framework critically improves earlier explanatory models: “an expanded model that includes opportunity, rationalization, pressure, and organizational culture would allow for more variables to be considered” (Moore 2020, 5).

**TABLE 2** | Hexagon factors to explain procurement corruption risks.

Hexagon corner	Indicators	Expected role in explaining corruption (COR)
Context (CON): Analytically relevant background factors setting stage for mechanisms producing corruption	Gender equality Stability of political system Economic wealth	Configuration of Hexagon factors hinges on the context as enabler or changing meaning
Opportunity (OPP): Environmental or situational weaknesses in the system that make corruption possible if the right person recognizes and exploits them	Independent press Transparency Rule of law Public sector accountability	OPP → COR
Supply (SUP): Actions or actor constellations that actively encourage or pursue corrupt exchanges	Organized crime	SUP → COR
Capability (CAP): Personal traits and abilities that are necessary to recognize and act upon a corruption opportunity	Public sector integrity	CAP → COR
Pressure/motivation (MOT): The individual, subjective or objective need or desire to commit corruption—occupational, economic, or social	Salary	MOT → COR
Rationalization (RAT): Factors facilitating efforts to reduce dissonance and normalize corrupt behavior	Interpersonal trust (INT) Trust in government (GOV) RAT = ~GOV + INT	RAT → COR

Note: Read: + = “OR,” ~ = “NOT,” → = “triggers.”

Contextual features are often associated with corruption under a structural or correlational approach to corruption research (Table 1). They may include the political system, such as government stability (Waterbury 1976), checks and balances (Sun and Johnston 2009), gender representation (Bauhr and Charon 2020), decentralization (Bardhan and Mookherjee 2006), or a country’s budgetary resources or economic wealth (Bardhan 2017). For example, lower levels of *gender equality* mirror underlying patriarchal norms, which are demonstrably associated with higher acceptance of corruption (Bauhr and Charon 2020). Following marginalization theory “women are on average, often excluded from positions and decision-making areas where greed corruption is likely to take place” (Bauhr and Charron 2020, 99). Accordingly, Dollar, Fisman, and Gatti (2001, 424) find “a strong, negative, and statistically significant relationship between the proportion of women in a country’s legislature and the level of corruption” across more than 100 countries (cf. Swamy et al. 2001). Second, unstable environments create uncertainty that can be exploited for bending rules and taking advantage of the powerless (Thomann, Marconi, and Zhelyazkova 2024). Here, “the link between political (in)stability and corruption has been fairly well-established” (Nur-Tegin and Czap 2012, 53). Since *political instability* provides fertile contexts for corruption, such as in disorderly transfers of government power, (armed) conflict, violent demonstrations, social unrest, international tensions, or terrorism (Waterbury 1976). Third, lower levels of *economic wealth* are associated with more systemic corruption (Bardhan 2017; Heidenheimer and Johnston 2017).

### 3.2 | Circumstances of Corruption

Unlike context, the concrete circumstances (opportunity and supply) relate to the situational features that directly contribute to public officials engaging in corruption.

#### 3.2.1 | Opportunity

Opportunity refers to *environmental or situational settings that make corruption possible* and influence the behavior of individuals, specifically “weaknesses in the system that the right person could recognize, exploit, and turn into reality” (Wolfe and Hermanson 2004, 2). Corruption is facilitated in settings where corrupt behavior remains inconsequential (Weißmüller and Zuber 2023). Opportunities stem from the regulatory environment, the internal and external accountability and monitoring system of an organization, and internal control systems within public organizations (J. W. Dorminey et al. 2010; Rustiarini et al. 2019). Structural or organizational constraints on public officials’ conduct work as “actual behavioral control” (Weißmüller and Zuber 2023, 1712): how formalized, transparent and standardized procedures within public administrations are (Kaufmann, Mehrez, and Gürgür 2019), red tape, bureaucratic power, and how much room is left to discretion (Moloney and Chu 2016; Zhang et al. 2019); whether recruitment and career progression is based on merit (Meyer-Sahling and Mikkelsen 2016; Oliveros and Schuster 2018). Insignificant supervision

by superiors, ineffective anti-fraud policies, and a weak ethical culture provide organizational opportunities for corruption (Ruankaew 2016; Persson, Rothstein, and Teorell 2013).

Opportunities for corruption are widely emphasized particularly in the rational-actor and structural literature (Table 1). Generally, a lack of oversight introduces moral hazard by hindering persecution (Fleming 2020). Ineffective sanctioning of corrupt behavior reduces the costs and increases the attractiveness of corruption (Bellé and Cantarelli 2017). Accountability needs to operate vis-à-vis the public sphere rather than toward politicians (Tambulasi 2009), family, or friendship networks (Campbell 2020). For example, a *weak civil society* cannot hold corrupt officials to account (Bauhr 2017)—especially if there is also no free and *independent press* that uncovers corrupt behavior and gives civil society voice and power (Themudo 2013). A free and independent press is “a powerful tool to promote transparency and accountability,” (2019: 356) which “increases the likelihood that abuses of power will be exposed,” decreasing opportunities for corruption (Campbell 2020, 6). Ex ante procedural *transparency* is necessary for effective oversight over public officials' behavior: its absence invites abuse of bureaucratic discretion (Bauhr et al. 2020), hinders detection and effective reporting (Knox and Janenova 2019). Transparency can limit opportunities for corruption in some cultural contexts, depending on social stigma and the rule of law (Bellé and Cantarelli 2017; Bauhr et al. 2020; Weißmüller and Zuber 2023). *Rule of law*—access to fair and impartial judicial services who can resist politicization—is crucial for anti-corruption enforcement; its absence offers opportunities for impunity (Uslaner 2008). A lack of a legal framework and inadequate enforcement of laws create opportunities for corrupt actions (Uslaner 2008). Similarly, lower levels of *public sector accountability* reduce control over whether public employees and judges act in compliance with the rule of law (Weißmüller and Zuber 2023). Ultimately, weak accountability mechanisms trigger self-selection of low-integrity individuals into public service (Hanna and Wang 2017). Therefore, “the opportunities available cannot be separated from the accountability system” (Rustiarini 2019, 357).

### 3.2.2 | Supply

The often-neglected relational perspective on corruption (Table 1) highlights the inherently transactional nature of the social relationships characterizing corruption (Bauhr 2017), which requires both a demand and a supply side (Gauthier, Goyette, and Kouamé 2021), a payer and a receiver to agree (Søreide 2002). Integrating this perspective, we define supply as *actions or actor constellations that actively encourage or pursue corrupt exchanges*. Supply of corruption can be the act of specific actors offering, promising or giving a bribe to a public official to obtain a material (e.g., trading) advantage, or urging or even coercing them to accept it (Gauthier, Goyette, and Kouamé 2021). For example, some middlemen, agents and brokers commissioned by businesses and investors routinely offer bribes and side payments to public officials (Søreide 2002). Broader actor constellations and networks can supply corruption in institutionalized, organized ways—for instance, when economic elites and networks use bribes, connections, and violence to strengthen their power

(Johnston 2014). *Organized crime* such as mafia-type organizations routinely engage in corruption of public officials and use intimidation, threats or force to protect their operations. Since “members of organized crime groups may be involved at all levels of this chain, and (...) exploit the political connections they have in order to rig public work bids to the advantage of the enterprises they control, or intend to favor,” organized crime is a means of supplying corruption by exploiting networks to secure contracts (Di Cataldo and Mastrorocco 2022, 799). Companies' choice not to take responsibility or issue anti-bribery commitments indicates supply (Søreide 2002). Some individuals, such as unethical leaders, have the coercive ability, persuasive personality and authority to convince or force others to engage in corruption (De Graaf and Huberts 2008; Weißmüller and Zuber 2023). Supply factors prevail when a bribe is given to gain personal advantages, based on collusion for mutual benefits (Navot, Reingewertz, and Cohen 2016; Bauhr 2017; Bauhr and Charron 2020). Unlike such greed-based corruption, need-based corruption occurs when people bribe public officials to gain “fair” access to important services that they would otherwise be denied (Bauhr 2017).

Supply goes beyond opportunity as it is not just a situational feature that makes corruption possible, but actively encourages, incentivizes, or even provides a concrete offer for corruption—such as when bribes are proactively initiated by firms (Gauthier, Goyette, and Kouamé 2021). Therefore, it is “paramount to further explore the supply side to give guidance (...) about the causes of corrupt practices (Markscheffel and Plouffe 2022, 3).” It differs from capability and pressure/motivation by not constituting personal characteristics of public officials. The opportunities, capabilities, pressures/motivations, and rationalization efforts of supply side actors are subsumed under supply.

## 3.3 | Personal Characteristics

Personal characteristics include the capability and pressure/motivation of public officials.

### 3.3.1 | Capability

Capability, as emphasized by the “bad apple” and rational-actor corruption literature (Table 1), captures a public official's *personal traits and abilities that are necessary to recognize a particular corruption opportunity and turn it into reality* (Wolfe and Hermanson 2004; Dorminey et al. 2010; Rustiarini et al. 2019, 353–354). First, an individual's position or function in the organization may give them the chance to exploit corruption opportunities. For instance, having a position of authority can enable an individual to override internal control mechanisms or control the social situation to their advantage (Ruankaew 2016). Second, individuals have different intellectual capacities to detect and exploit opportunities for corruption and deal with stress, making them “smart enough to exploit [their] understanding of these internal control weaknesses, and to abuse [their] unique position or function to the greatest personal advantage” (Rudewicz 2011, 2). Third, individuals vary in their self-confidence that they can get away with corruption (Rustiarini et al. 2019). Capability is indicated for example by



egocentricity, success orientation, a low fear of detection, or the ability to lie (Rezaee 2005).

We consider *public sector integrity*, as the product of how public officials act within institutions, as an indicator of capability traits. High-integrity individuals have higher awareness of the moral costs and harmfulness of corrupt behavior, which reduces their propensity to engage in and tolerate it (Weißmüller and Zuber 2023). Thus, lack of values like impartiality, honesty, and public service commitment triggers corruption (Olsen et al. 2019), since “values and norms guide the choice of action and provide a moral basis for justifying or evaluating what we do” (Fijnaut and Huberts 2000, 5). Though it also indicates the possibility for corruption, capability differs from opportunity as it refers to personal characteristics of the corrupted actors, rather than the circumstances (Rudewicz 2011).

### 3.3.2 | Pressure/Motivation

Pressure or motivation are defined as an *individual—subjective or objective—need or desire of a public official to commit corruption* (Wolfe and Hermanson 2004). This antecedent of corruption is emphasized by the “bad apple” and relational perspectives, but also plays a role in rational-actor and structural corruption approaches (Table 1). Pressure and motivation are related as they can amplify one another. External pressures often activate latent motivations, such as the predisposition to exploit opportunities. Moreover, intrinsic motivation can shape how pressures are perceived and acted upon (J. Dorminey et al. 2012). Following Rustiarini et al. (2019), these two aspects capture one underlying dimension: a corrupt person’s motives.

Pressure stems from external factors and can be occupational, economic, and social (Rustiarini et al. 2019; Cressey 1953). Occupational pressure can come from within the organization (e.g., superiors) or external parties who are affiliated with the organization (e.g., politicians or parliament members). For example, bureaucrats may receive instructions from their superiors to commit unethical behavior. Economic pressure can be the result of poor pay, personal financial losses or personal debt creating an individual need or desire for additional income. Finally, social pressure may arise from the expectations by suppliers, friends, or family, or an egocentric desire to gain reputation, prestige, promotion, recognition, or power (Rustiarini et al. 2019). It creates a situational force that drives individuals to consider unethical actions as a means of relief or compliance. Pressure or motivation can be indicated by “red flags,” that is, patterns that are unusual or deviate from normal, as a warning signal (DiNapoli 2008). For example, employee may display behavioral changes for fear of losing the job, or managers may display significant disrespect for regulatory bodies. Motivation, in contrast to pressure, is an internal state or desire, shaped by personal goals, greed, or ambition (Cressey 1953). It reflects a proactive pursuit of benefits or power rather than a reactive response to external demands. Motivation can be a function of *public sector pay*. Public officials with high salaries engage less in corruption (Meyer-Sahling, Mikkelsen, and Schuster 2018; Navot, Reingewertz, and Cohen 2016). Conversely, low public sector pay can trigger greed and self-serving behavior (Kuo, Jiang, and

Huang 2023). Dissatisfaction may lead public officials to seek additional income (Ripoll and Breugh 2019) when “the low income of the civil servant officials will encourage their involvement in fraudulent practices to earn income equal to private sector” (Rustiarini et al. 2019, 350). Moreover, underpaid public managers may face less incentives to persecute corrupt behavior (Weißmüller and Zuber 2023). Accordingly, we operationalize this dimension using public sector “salary levels [which] are indicative of corruption motives and the willingness to report and curb corrupt behavior of others” (Weißmüller and Zuber 2023, 1716). Research shows that “low salaries create external pressure to seek additional sources of income as a means of sustenance” (Weißmüller and Zuber 2023, 1713).

The Corruption Hexagon helps us model pressure or motivation as a reaction to the supply of corruption. Unlike Wolfe and Hermanson (2004), we argue that supply settings surrounding public officials that objectively incentivize corruption do not yet constitute pressure or motivation. Pressure/motivation captures characteristics, behaviors, or perceptions of public officials that indicate their individual *susceptibility to supply*. Whilst pressures may originally stem from the surrounding national, sub-national, or organizational setting (Weißmüller and Zuber 2023), the distinction between pressure and supply is important. Not every public official is equally susceptible to the supply of corruption depending on, for instance, prosocial attitudes (Kravtsova, Oshchepkov, and Welzel 2017) or accountability relations (Bardhan and Mookherjee 2006). For example, if economic actors and their higher-up political allies use their power to push corruption, it indicates supply of corruption (unlike Rustiarini et al. 2019); but if a given public employee is in a weak power position to resist these attempts, then it constitutes pressure, that is, a perceived individual need to commit corruption.

### 3.4 | Rationalization

An important insight of the “bad apple” approach to corruption (Table 1) is that illicit behavior like corruption usually creates dissonance in those committing it (Rustiarini et al. 2019, 348). Individuals do not want to violate trust or acknowledge that their behavior is wrong (Aronson ). Without a morally acceptable justification, a public official is unlikely to commit corruption (Cressey 1953). Therefore, “in any given context, an individual’s decision to engage in corrupt behavior is subject to interior rationalization, or the internal world, as well as the underlying social or meso world, and institutional context” (Dimant and Schulte 2016, 70). Rationalization refers to *factors facilitating efforts to reduce dissonance and normalize the corrupt behavior*. They help create a certain mindset or provide public officials with reasons to justify their actions, disengage from guilt, maintain self-image and a moral comfort zone, using formulas like “other people do that,” “no one lost,” “it is for a good purpose,” “it is not a crime” (Ruankaew 2016; Rustiarini et al. 2019).

Beyond greed and self-serving justifications (Cressey 1953), rationalization is influenced by organizational environment, obligations, long-term social learning processes based on cost-benefit analyses, and informal social relationships (Dimant and Schulte 2016; Weißmüller and Zuber 2023). Witnessing unethical

leadership, the continuous inconsequentiality of corruption or abuse of discretion followed by institutional inertia creates adverse feedback effects that cement corruption as “normal” administrative behavior. For example, if leaders with authority signal to their subjects that corrupt behavior is tolerated and will not be sanctioned (Miao et al. 2013), then social group effects (Harari et al. 2017) in intra- and extra-organizational networks (De Graaf and Huberts 2008) can trigger corrupt conduct, especially in societal contexts that justify corruption practices as the prevailing social norm (Suhardiman and Mollinga 2017). Furthermore, “loyalty and solidarity play a major role in the decision not to talk about or report any suspicions of wrongdoing” (De Graaf and Huberts 2008, 647). Therefore, “the process of rationalization itself—that is, individuals’ benchmark of moral judgment—is decidedly shaped by their organizational environment and the moral social learning process reinforced by its members in the form of clients, co-workers, and leaders” (Weißmüller and Zuber 2023, 1720).

In particular, trust and corruption are strongly related: “trust is a value expressing the belief that others are part of your moral community” (Uslaner 2004, 2). Trust lays the foundation for cooperation with others (Uslaner 2002). Therefore, strong *interpersonal trust* within a corrupt network indicates that illicit behavior is more likely to be rationalized, by making the behavior of network members appear socially acceptable and reducing moral dissonance (Uslaner 2002, 2004). Strong *interpersonal trust*, if combined with low *trust in government*, may shift the moral locus of accountability from serving the public interest toward serving peers and rewarding loyalty, triggering nepotism and patronage (Weißmüller and Zuber 2023). The normalization of such practices erodes the distinction between private and public interests, turning actions that serve the group into the accepted norm.

### 3.5 | Causally Complex Explanations for Corruption

The Hexagon framework allows for deriving causally complex theoretical expectations (Ragin 1987; Thomann and Ege 2020). First, *conjunctural causation* means that rather than isolating the effect of one factor, each factor may unfold explanatory power only through interaction with other factors (Thomann and Ege 2020). Accordingly, the Corruption Hexagon models the interplay of the circumstances of corruption with personal characteristics and rationalization. Second, these factors’ impact on corruption varies: We distinguish *necessary conditions*, which must be given for corruption to occur, from *sufficient conditions*, which then trigger corruption (Ragin 1987). The Hexagon model assumes that circumstances are necessary, while their combination with personal characteristics or rationalization is sufficient for corruption to occur (expectation 1). Third, the notion of *asymmetry* “means that the occurrence of a certain phenomenon might have a very different explanation than its non-occurrence” (Thomann and Ege 2020, 11). Fourth, a *mechanistic* perspective models the causal process that leads to corruption (Beach 2021), for example through within-case analysis of how the different Hexagon corners interact over time. Fifth, the Hexagon integrates *context contingency*, where the operation of causal dynamics interacts with contextual factors (Falleti and

Lynch 2009; Goertz 1994). Sixth, this context-specificity manifests as *equifinality*: several, substitutable mechanisms may lead to corruption, rather than one model that best fits the data (Thomann and Ege 2020). Accordingly, different combinations of circumstances, personal characteristics, and rationalization can provide for more active or passive pathways toward corruption in different contexts (expectation 2).

#### 3.5.1 | Expectation 1: The Circumstances Must Be Conducive to Corruption

The Fraud Diamond theory posits that for public sector actors to engage in corruption, they must have the opportunity to do so (Wolfe and Hermanson 2004). The Hexagon framework broadens this argumentation, by adding supply to those circumstances that enable corruption to occur (Gauthier, Goyette, and Kouamé 2021; Søreide 2002). We generally expect that circumstances conducive to corruption—supply, or opportunity, or both—are necessary for corruption to occur. However, they can mutually substitute or even compensate for each other: empirically, corruption occurs even in the absence of obvious opportunities (see Section 5). Expression 1 states this expectation formally. Necessity is formally captured with the backward arrow  $\leftarrow$ , while equifinality is captured with the logical operator OR (+):

$$\text{Expression 1 : } \text{OPP} + \text{SUP} \leftarrow \text{COR}$$

Read : + = “OR”,  $\leftarrow$  = “is necessary for” .

#### 3.5.2 | Expectation 2: Circumstances Must Combine With Personal Characteristics or Rationalization

Wolfe and Hermanson (2004) stressed that opportunities can only be turned into corruption if the public official has the capability to do so. While logically compelling, empirical evidence challenges this restrictive assumption. Under the right circumstances, strong pressure/motivation might have the same effect and might even compensate for low capability. More broadly, whereas the circumstances enable and incentivize corruption, their combination with personal characteristics should trigger corruption. Moreover, where the normalization of corruption is widespread, personal characteristics might become irrelevant for corruption. For example, in some societies public servants rationalize it as a social obligation to follow corrupt leaders’ example (supply) since authority must not be questioned (Weißmüller and Zuber 2023). Circumstances must combine with either personal characteristics or rationalization in order to trigger corruption—see expression 2. Conjunctural causality is captured with the logical operator AND (\*), whereas sufficiency is indicated by a forward arrow  $\rightarrow$ :

$$\text{Expression 2 : } (\text{OPP} + \text{SUP}) * (\text{CAP} + \text{MOT} + \text{RAT}) \rightarrow \text{COR}$$

Read : + = “OR”, \* = “AND”,  $\rightarrow$  = “is sufficient for” .

We now demonstrate the Hexagon’s empirical explanatory value.

## 4 | Data and Methods

To operationalize the Corruption Hexagon, we use secondary data in 23 member states of the EU (data for Lithuania, Luxembourg, Malta and the Netherlands was unavailable) to explain differences in corruption risks in public procurement in the year 2020. Procurement-related corruption risks refer to the granted leeway and ambiguity in legal rules, procedures, institutional arrangements, and contracts that are commonly associated with corruption (Fazekas, Tóth, and King 2016). These risks are especially prevalent in situations where procurement processes lack transparency, clear criteria, or effective oversight mechanisms (Fazekas, Tóth, and King 2016). For example, discretionary powers granted to procurement officials or decision-makers can create an opportunity for bribery or kick-backs (Jain 2001; Rose-Ackerman and Palifka 2016). When procurement rules are ambiguous or open to interpretation, decision-makers may favor specific suppliers, often in exchange for personal gain (Jain 2001), particularly in non-competitive processes such as single-source contracts or when there is a lack of detailed evaluation criteria for awarding contracts.

Corruption risks are widely studied under the assumption that “where there is smoke, there is fire,” offering an unbiased, sector-specific measurement. Unlike perception-based indices, the corruption risk index (CRI) developed by Fazekas, Tóth, and King (2016) and the Government Transparency Institute (GTI) rely on actual contract data from public procurement records to objectively measure corruption risks in public procurement processes. Capturing specific contract types that indicate a heightened risk of corruption, the CRI aggregates 7 risk indicators during the contract submission, assessment, and delivery phase. For a detailed description of the CRI methodology and indicators, see Fazekas, Tóth, and King (2016, 2023).

Figure 3 reveals the significant variation in corruption risks among the 23 countries in 2020. It is this variation that our empirical illustration sets out to explain. Corruption is typically studied in contexts characterized by weak state institutions. However, corruption also prevails in a context of comparatively strong state institutions and economic wealth like Europe, with

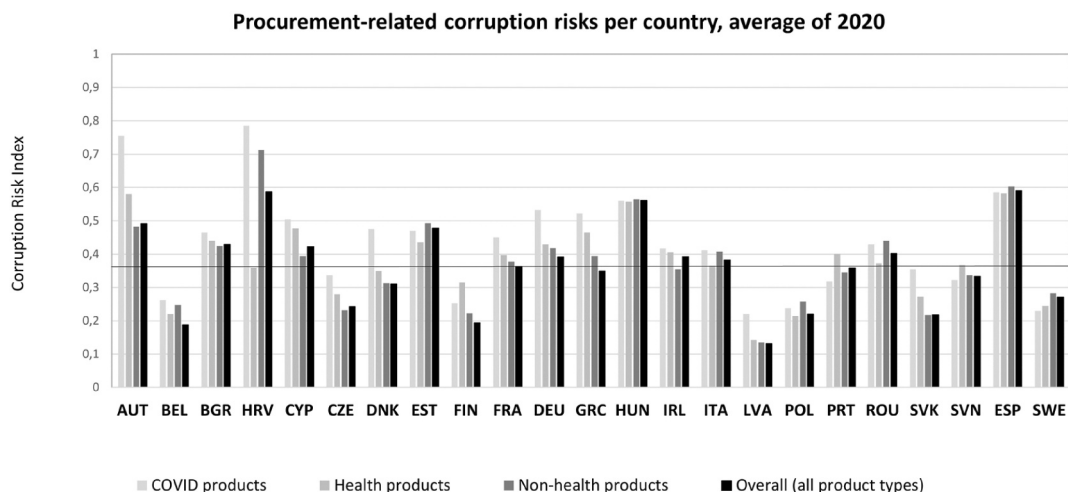
significant cross-country variation specifically in the public procurement sector (Thomann, Marconi, and Zhelyazkova 2024), thus providing a relevant context for demonstrating the Hexagon’s explanatory power.

### 4.1 | Fuzzy-Set Qualitative Comparative Analysis (fsQCA)

We employ fuzzy-set Qualitative Comparative Analysis (fsQCA) (Oana, Schneider, and Thomann 2021) which directly models the several and complex configurations of Hexagon factors that are necessary and/or sufficient for the outcome (Thomann and Ege 2020; Gerrits and Verweij 2013). The Hexagon corners as explanatory conditions and the outcome “above-average corruption risks” are sets which some countries display (COR) while others do not (~COR), and to different degrees. We first assess necessary conditions for the outcomes and then sufficient conditions. All logically possible combinations of conditions represent the rows of a “truth table.” Truth table rows not observed empirically are labeled “logical remainders.” If a given truth table row has enough cases also displaying the outcome, the configuration is sufficient for the outcome. The logical minimization algorithm derives the shortest possible description of the sufficient configurations for the outcome (packages QCA and SetMethods; Duşa 2019). QCA results must satisfy the criteria of empirical consistency, empirical importance, and substantive importance. The consistency, Proportional Reduction in Inconsistency (PRI), coverage, and Relevance of Necessity (RoN) parameters all span from 0 to 1. Through Enhanced Standard Analysis, we make theoretically informed and logically tenable assumptions about logical remainders (Table 2). The Supporting Information S1: Appendix displays detailed analyses, alternative solution models, robustness tests, the dataset and the R replication file.<sup>1</sup>

### 4.2 | Data, Measurement and Calibration

Table 3 summarizes our measurement (details see Supporting Information S1: Table A1). Triangulating secondary data sources



**FIGURE 3** | Corruption risks in 23 EU countries, 2020. The overall CRI (black bar) was used as outcome measure in the analyses. The black horizontal line distinguishes countries with above-average overall corruption risks from those with below-average risks.

**TABLE 3** | Operationalizing the Corruption Hexagon.

Set	Measurement	Data source
Context relatively conducive to corruption CON	Number of seats occupied by women in national parliament	<a href="#">Inter-Parliamentary%20Union</a>
	Likelihood of a disorderly transfer of government power, armed conflict, violent demonstrations, social unrest, international tensions, terrorism, ethnic, religious or regional conflicts	<a href="#">TheGlobalEconomy.com</a>
	Gross Domestic Product (GDP) per capita	<a href="#">World%20Bank</a>
Above-average opportunity OPP	Perceived extent to which a country's citizens can participate in selecting their government, freedom of expression, and freedom of association	<a href="#">Freedom%20House</a> and <a href="#">V-Dem</a>
	Degree of freedom that journalists, news organizations, and citizens have in country, and the efforts made by authorities to respect this freedom	<a href="#">Reporters%20Without%20Borders</a>
	The available and accessible (cost free) minimal public information, made available by governments to their citizens, required to deter corruption and enable public accountability in a society; de jure and de facto <sup>a</sup>	<a href="#">CorruptionRisk.org</a>
	Extent to which laws are transparently, independently, predictably, impartially, and equally enforced, and the actions of government officials comply with the law	<a href="#">V-Dem</a>
	Assessments of in-law and in-practice efforts to enhance the transparency of public administration and the accountability of public officials	<a href="#">EuroPAM</a>
Above-average supply SUP	A continuing criminal enterprise that rationally works to profit from illicit activities that are often in great public demand (criminal markets, criminal actors, resilience)	<a href="#">Global%20Initiative%20Against%20Transnational%20Organized%20Crime</a>
Above-average capability CAP	The capacity of the public sector to act in an impartial way	<a href="#">V-Dem</a>
Above-average motivation MOT	Net remuneration of central bureaucrats in real terms	<a href="#">Eurostat%20</a>
Environment facilitates rationalization RAT	Level of trust put in other persons Level of trust put in the national government	<a href="#">Eurobarometer%2093.1</a> <a href="#">Eurobarometer%2089-97</a>
Above-average corruption risks COR	Granted leeway and ambiguity in legal rules, procedures, institutional arrangements, and contracts that are commonly associated with corruption; average the corruption Risk Index (CRI)	<a href="#">Government%20Transparency%20Institute</a>

<sup>a</sup>Data unavailable for 2018–2020. Given the relative stability of this structural factor, values from 2021 are used.

helps us obtain a more robust picture of corruption antecedents (Thomann, Marconi, and Zhelyazkova 2024).

All explanatory sets were operationalized as the country's mean value between 2018 and 2020 unless indicated otherwise and normalized to range from 0 to 100. Except for organized crime, trust in government and interpersonal trust, variables were reverse-coded such that higher values on the respective Hexagon corner should be conducive to corruption. We calculated the mean of all variables for each Hexagon corner, where the

aggregate value of 100 reflects the *sample maximum* of countries' mean value on the indicators. Ensuring comparability, these data reflect regional differences within the EU.

Fuzzy sets capture different degrees to which Hexagon corners and corruption prevail empirically. We attribute cases to sets using the direct method of calibration (Oana, Schneider, and Thomann 2021). Our analytic goal is to explain why some countries have comparatively higher corruption risks than others in the EU context. To explain this *regional variation*, we

analyze what sets countries *relatively* apart from each other. Rather than assuming objectively high corruption risks or Hexagon factors, we therefore use the sample average to attribute cases within or out of the sets, and interpret sets comparatively within the regional context. For instance, a country's membership above 0.5 in the set COR indicates it has "above-average corruption risks in the EU context." Anchors for full set membership reflect the sample maximum, and full set non-membership reflects the sample minimum (Supporting Information S1: Table A2).

## 5 | Empirical Demonstration

Results corroborate our first expectation that for above-average corruption risks, the circumstances must be conducive to corruption. Comparatively high corruptions risks prevailed only when public actors either had the opportunity or supply for corruption (OPP + SUP).<sup>2</sup> This result empirically reflects the necessity and equifinality we modeled earlier: corroborating the Hexagon model, not just opportunity, but also supply matters as a circumstance enabling corruption. Conversely, no individually necessary conditions were detected (Supporting Information S1: Tables A4 and A5).

Turning to expectation 2, Table 4 reports the sufficient conditions for above-average corruption risks (COR). The Hexagon model has a very good explanatory power, covering 10 out of 12 above-average risk countries. Moreover, consistency is high. Of the two deviant cases (marked bold in Table 4), Greece's corruption risk is only just below average, still supporting the sufficiency pattern. As theorized, we find that complex *conjunctions* of factors trigger corruption and that *equifinal* high-risk, active, or passive pathways produce this outcome.

### 5.1 | Path 1: High-Risk Corruption Cases

Bulgaria, Greece and Italy strongly support the Hexagon's assumptions. If the context (CON), circumstances (OPP\*SUP) and personal characteristics (CAP\*MOT) are conducive, then we observe above-average corruption risks. In such a high-risk scenario where five Hexagon corners work in interplay, whether or not actors rationalize corruption becomes irrelevant.

For example, in Italy, public sector employees are paid comparatively low salaries and organized crime continues to prevail (Di Cataldo and Mastrorocco 2022). Opportunities for corruption increased when procuring pandemic-related products and spilt over to other procurement areas, especially as Italy already had "low levels of integrity in public procurement as well as low (or declining) levels of accountability and transparency" (Fazekas et al. 2023, 34).

### 5.2 | Path 2: Active Trump Passive Corruption Risk Factors

However, corruption does not only occur in such high-risk contexts. Even when possibilities passively shaping corruption are partially lacking, actors may compensate for this when they actively seek to make corruption happen. Frequently, above-average procurement corruption risks prevailed when there were comparatively few opportunities for corruption (~OPP), but an above-average supply for corruption (SUP) and actors were likely to rationalize corruption (RAT), either because of strong interpersonal trust (Ireland, Spain) or weak trust in government (France, Croatia, Romania).

In Spain, for instance, opportunities for corruption are relatively scarce on all indicators but public sector accountability and freedom of press. However, levels of organized crime are amongst Europe's highest. These organized actor structures pursue corrupt exchanges in public procurement within social relations characterized by trust. Accordingly, corruption risks increased sharply during the early COVID-19 pandemic and spilt over to general and health-related procurement (Fazekas et al. 2023). This configuration resulted in above-average corruption risks in five countries, but not in Slovakia where corruption opportunities are notably lower than in similar countries like Romania and Croatia (Meyer-Sahling, Mikkelsen, and Schuster 2018).

### 5.3 | Path 3: Passive Trump Active Corruption Risk Factors

We further find an alternative, passive pathway to the above active configuration. In Cyprus and Hungary, corruption occurs

**TABLE 4** | Enhanced intermediate solution for above-average corruption risk (COR).

	Consistency	PRI	Coverage	Unique coverage	Cases
Path 1: High risk					
CON* OPP* SUP* CAP* MOT	0.878	0.651	0.427	0	BGR, <b>GRC</b> , ITA
Path 2: Active trumps passive					
~OPP* SUP* RAT	0.849	0.619	0.611	0.175	IRL; FRA, ESP; HRV, ROU, <b>SVK</b>
Path 3: Passive trumps active					
OPP* CAP* ~RAT	0.880	0.629	0.309	0.025	CYP; HUN
Path 4: Political corruption					
~CON* OPP* ~RAT	0.866	0.551	0.309	0.025	AUT
Solution	0.815	0.623	0.799		

Note: Bold: Deviant case consistency in kind, with below-average corruption risk. Read: \* = "AND," ~ = "NOT."

as the passive possibilities clearly exist: actors have the opportunity and capability for corruption (OPP\*CAP). Simultaneously, they tend not to actively rationalize corruption (~RAT), given comparatively weak interpersonal trust but relatively strong trust in government. For example, in Hungary, procurement corruption is facilitated by particularistic networks of buyers and suppliers that distort procurement markets but get disrupted by government changes (Fazekas and Wachs 2020).

## 5.4 | Path 4: Political Corruption

In the puzzling, idiosyncratic case of Austria, actors tend not to rationalize corruption (~RAT). Opportunities for corruption are above average (OPP), but comparatively lower than in Cyprus and Hungary—even though its public sector accountability is among the weakest in Europe. As the context is not conducive to corruption (~CON), Austria's fourth-highest corruption risk in our sample contradicts our expectations. At the time Austria's government under Chancellor Sebastian Kurz was infamously involved in high-level corruption cases. When the pandemic hit, Austria's generally relatively pronounced political corruption (Heidenheimer and Johnston 2017) may have spilt over into the procurement sector (Fazekas et al. 2023).

Future research should look into Estonia, whose comparatively high corruption risks in the public procurement sector the Hexagon model cannot explain, and contrast with its consistent ranking among the least (perceived) corrupt countries worldwide.<sup>3</sup> Neither its circumstances, nor aggregated actor characteristics make it prone to corruption. Yet like France and Spain, Estonia's context is conducive to corruption, and rationalization above average. Estonia's pioneering role in public sector digitalization and transparency facilitated more effective detection of corruption practices, since “E-government has played an important role in tackling corruption (...) across post-Soviet countries” (Knox and Janenova 2019, 608). The higher visibility of problems in procurement could increase the measured corruption risks, although perceived corruption remains low. While digital systems such as e-procurement increase transparency, they also open new opportunities for tech-savvy actors to exploit loopholes in the system; thus “e-government precisely creates new corruption opportunities” (Rustiarini 2019, 279). Estonia's relatively high levels of both interpersonal and political trust could facilitate the rationalization of corruption within social networks (You 2018, 4), as has also been observed in other countries with strong interpersonal trust (Weißmüller and Zuber 2023). The Estonian case therefore has important implications for the interpretation and validity of corruption risk indices in countries with modernized administrative structures.

## 6 | Discussion

Our analysis demonstrates how to fruitfully operationalize the Corruption Hexagon, which offers much flexibility in a given research context. Results lend strong support to its two core theoretical expectations. In the EU context, circumstances that are prone to corruption—by providing not just opportunities

(Wolfe and Hermanson 2004), but alternatively, supply for corruption (Søreide 2002)—enable high corruption risks. Moreover, circumstances need to combine with personal characteristics (paths 1 and 3) or rationalization (path 2) to result in above-average corruption risks (Rustiarini et al. 2019). However, some of the many possible Hexagon configurations may trump others. Results suggest that active factors may dominate passive factors, and vice versa. At least two active factors make up for the absence of one passive factor, or at least two passive factors for the absence of one active factor. The Hexagon can thus distinguish “passive” pathways toward corruption, involving context, opportunity and/or capability, from more “active” pathways involving supply, motivation, and/or rationalization. Future research should further explore this novel distinction.

Our empirical illustration has limitations. First, we used highly aggregated secondary data, which should always be treated with “particular care” (Jollands, Lermitt, and Patterson 2004, 295). The aggregation eliminates many crucial details, especially differences within and between countries. Aggregated secondary data often suffers from limited consistency and accuracy when coming from different primary sources with different collection and classification methods (Jollands, Lermitt, and Patterson 2004). This refers to the indecipherability of a combined message when too many things are lumped together (Meadows 1998, 4) which might jeopardize the reliability of the results. Second, by relying on highly aggregated national data, the results only highlight cross-country differences in the European context, neglecting the lower-level variation relevant to better capture and understand the actual mechanisms and dynamics (Sellers 2019). Fazekas, Tóth, and King (2016) demonstrate the critical importance of subnational data in identifying corruption risks. Future research should integrate similar subnational approaches to provide more actionable insights into corruption dynamics. Third, in the present analysis the country context only matters in triggering corruption when many other factors do so, too—but country context has no or a counter-intuitive role in other constellations. Thus, how country context empirically acts as cause, barrier, or as changing meaning remains for future research to explore (Goertz 1994). Fourth, QCA models conjunctural causation, equifinality, and asymmetry through rigorous comparison, but neither how causal mechanisms operate over time, nor how exactly macro, meso, and micro level factors affect each other. Despite using a case-sensitive method, our results prove highly robust to alternative specifications. Future research may fruitfully study one or several aspects of complexity that the Hexagon models using other, qualitative or quantitative empirical research methods.

## 7 | Conclusions

In synthesizing the interdisciplinary literature, we propose an integrated model that can be flexibly applied to explain different variants of corruption, whose analytic advantages advance the field. First, the Corruption Hexagon considers the complex interplay of factors enabling or triggering corruption in context-dependent ways. Thereby, this framework allows scholars to theorize and empirically analyze the many ways in which the circumstances in a given context can enable

corruption, and then trigger its occurrence in combination with personal characteristics of public officials or the rationalization of corruption. Second, integrating diverse data sources and employing various analytical methods throughout the research process is crucial for generating valid and robust insights into corruption (Bader et al. 2013). This underscores the need for a theoretical model like the corruption Hexagon, that supports both quantitative and qualitative approaches. Third, the Corruption Hexagon integrates different theoretical assumptions about the agency that underlies corruption, at different levels of analysis: the relational nature of corruption, the importance of structural contexts, opportunities and constraints, as well as behavioral aspects such as rationalization and motivation. Its applicability at different analytic levels is a core advantage. For example, Weißmüller and Zuber (2023) use a sophisticated model from social psychology to explain the complexity of rationalization for corruption; the Corruption Hexagon integrates and broadens this contribution by enabling, but not requiring scholars to operate on the behavioral micro-level when studying corruption empirically. Similarly, scholars could use the Hexagon framework to integrate supply and context into Zhang et al. 's (2019) work-related model of corruptibility "to develop it and make it even more convincing" (Zhang et al. 2019, 559).

The Corruption Hexagon enables researchers to overcome disciplinary "siloes" in corruption research and better explain its real-life occurrence. It integrates criminological theory with behavioral and macro-insights, building on and adding to existing theoretical models of why corruption occurs (e.g., Bellé and Cantarelli 2017; De Graaf and Huberts 2008; Weißmüller and Zuber 2023). Simultaneously, the Corruption Hexagon overcomes simplistic rational choice assumptions (Cressey 1953), integrating social choices and obligations. Assuming that actors' circumstances and characteristics interact in diverse contexts, the Corruption Hexagon responds to "De Graaf's (2007) call for more contingency in corruption research to gain a more nuanced understanding of corrupt behavior as a dynamic outcome of causes beyond individuals' control" (Weißmüller and Zuber 2023, 1720), and considers heterogeneity when comparing countries and institutions. Using the Corruption Hexagon facilitates corruption studies from different disciplines and analytic perspectives to have their result speak to each other in a cumulative manner and thus addresses the demand for "a multidisciplinary approach (...) to understand the complex nature of corruption (Dimant and Schulte 2016, 71) fostering theoretical progress in corruption research." Last but not least, the Corruption Hexagon can serve as a useful tool for teaching corruption and showcasing its multi-level, complex, relational nature.

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#### Conflicts of Interest

The authors declare no conflicts of interest.

#### Data Availability Statement

The online supplementary materials for this article are publicly available at <https://doi.org/10.7910/DVN/BTKFG6>.

#### Endnotes

<sup>1</sup> All supplementary online appendices are available at <https://doi.org/10.7910/DVN/BTKFG6>.

<sup>2</sup> Only the idiosyncratic case of Estonia contradicts necessity (Supporting Information S1: Figure A1).

<sup>3</sup> <https://www.transparency.org/en/cpi> (accessed July 26, 2024).

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### Supporting Information

Additional supporting information can be found online in the Supporting Information section.